



1.3 Understanding the relationship between zeros and factors of polynomials

2017-2018

End Behaviors

Name _____ Date _____ Period _____

For the given polynomials determine which of the binomials listed are factors. State what method was used (factoring or remainder theorem). Show work!

1. $f(x) = 2x^2 - 8x + 6$

a. $x+1$

b. $x-1$

c. $x-3$

2. $f(x) = x^2 + 9x$

a. $x-3$

b. $x-0$

c. $x+9$

3. $f(x) = x^3 - x^2 - 5x - 3$

a. $x+1$

b. $x-1$

c. $x-3$

4. $f(x) = x^3 - 3x + 2$

a. $x-1$

b. $x+2$

c. $x+1$

Without graphing, determine the number of zeros for each of the following polynomials.

5. $f(x) = 2x^2 - 8x + 6$

6. $f(x) = -x^2 + 9x$

7. $f(x) = x^3 - 3x + 2$

8. $f(x) = -x^7 + 27$

9. $f(x) = -x^4 - 8x^3 - 2x^2 + 3x - 5$

10. $f(x) = -8x + 6$

Without graphing, state the degree of the polynomial and determine whether it is even or odd, then write the end behavior as a limit.

11. $f(x) = 2x^2 - 8x + 6$

degree:

Is the degree even or odd:

$$\lim_{x \rightarrow -\infty} f(x) =$$

$$\lim_{x \rightarrow \infty} f(x) =$$

12. $f(x) = x^5 + 3x^4 - 2x^3 - 5x^2 - 10x + 1$

degree:

Is the degree even or odd:

$$\lim_{x \rightarrow -\infty} f(x) =$$

$$\lim_{x \rightarrow \infty} f(x) =$$

13. $f(x) = -x^3 - x^2 - 5x - 3$

degree:

Is the degree even or odd:

14. $f(x) = -x^4 + 3x - 10$

degree:

Is the degree even or odd:

Practice Problems

Factor the following polynomials. Use polynomial identities if necessary. Show work!

15. $x^3 + 13x^2 + 42x$

16. $6az^2 - 2ac + 9bz^2 - 3bc$

17. $64x^2 - 1$

18. $m^2 - 24m + 144$

Simplify each expression using the proper operations. Show work!

19. $(3x - 5)(x + 2)$

20. $2(x - 5) - 3(x^2 + 5x - 1)$